REMARKS

Prior to entry of this amendment, claims 1-7 are pending. Claims 1-7 are presented for further prosecution on the merits.

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

Claims 1-7 Recite Patentable Subject Matter

In the Office Action mailed December 2, 2004, claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,610,503 to Fogg et al. (hereinafter, "Fogg") and claims 5-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fogg in view of U.S. Patent No. 6,091,234 to Kitagawa (hereinafter, "Kitagawa"). Applicant respectfully traverses these rejections for at least the reasons set forth below.

Claim 1

Claim 1 recites, in part:

> during most of a period after the start-up until a voltage at one end of the output voltage adjustment capacitor reaches the predetermined voltage level, the output voltage and the voltage at one end of the output voltage adjustment capacitor vary in such a way as to describe curves substantially similar to each other.

The voltage at the one end of the output voltage adjustment capacitor and the output voltage as recited in claim 1 may be seen, for example, in Figs. 4A and 4B of the application.

It is respectfully submitted that the DC/DC converter disclosed in Fogg is incapable of producing an output such that, during most of a period after the start-up

until a voltage at one end of the output voltage adjustment capacitor reaches the predetermined voltage level, the output voltage and the voltage at the one end of the output voltage adjustment capacitor vary in such a way as to describe curves substantially similar to each other.

More particularly, Fogg discloses a DC/DC converter including a soft-start circuit 24, which allows a reference voltage 22 to ramp up after start-up. The reference voltage 22 is divided to produce a second reference voltage. An error amplifier generates an error signal based on the difference between the second reference voltage and an actual output voltage. The output voltage of the circuit is produced based on the error signal. In addition, the desired output voltage is chosen based on the first reference voltage 22.

In the configuration disclosed by Fogg, it takes considerable time for the error voltage to reach the reference voltage. During the period in which the error voltage is lower than the reference voltage, the DC/DC converter can only produce a negative or extremely low output current. Thus, there is no rise in the output voltage for a period immediately after start-up. Therefore, the soft-start capacitor C2 is allowed to charge so that when the error voltage reaches the reference voltage, the output voltage may rise abruptly causing an overshoot in the output voltage. Thus, during most of a period after the start-up until a voltage at one end of the capacitor C2 reaches the predetermined voltage level, the output voltage and the voltage at the one end of the output voltage adjustment capacitor will not vary in such a way as to describe curves substantially similar to each other in the DC/DC converter of Fogg.

Thus, Fogg fails to disclose or suggest each and every feature of the invention as recited in claim 1. Accordingly, claim 1 is neither anticipated nor rendered obvious by Fogg, and withdrawal of the rejection of claim 1 under 35 USC § 102(b) is respectfully requested.

Claim 2

Claim 2 recites, in part:

> during most of a period after the shut-down until a voltage at one end of the output voltage adjustment discharge circuit reaches the predetermined voltage level, the output voltage and the voltage at one end of the output voltage adjustment discharge circuit vary in such a way as to describe curves substantially similar to each other.

Since the voltage at one end of the output voltage adjustment discharge circuit and the output voltage vary in such a way as to describe curves substantially similar to each other, the output voltage will be stable, even after shut down, in the claimed invention. Hence, there is no undershoot in the output voltage after shutdown.

In contrast, Fogg uses the second reference voltage to produce the error signal, which is used to generate the output voltage. Thus, in Fogg, the output voltage is a function of the second reference voltage. However, the voltage at one end of the output voltage adjustment discharge circuit of Fogg is the first reference voltage. Thus, the output voltage and the voltage at the one end of the output voltage adjustment discharge circuit will not describe curves that are substantially similar to each other during most of a period after shut down in Fogg.

Therefore, Fogg fails to disclose or suggest each and every feature of the invention as recited in claim 2. Accordingly, claim 2 is neither anticipated nor rendered

obvious by Fogg, and withdrawal of the rejection of claim 2 under 35 USC § 102(b) is respectfully requested.

Claim 3

Claim 3 recites in part:

> a variable reference voltage source for generating a variable reference voltage that starts rising at start-up and/or that starts falling at shut-down;
>
> a first constant reference voltage source for generating a first constant reference voltage;
>
> a second constant reference voltage source for generating a second constant reference voltage...
>
> wherein the error voltage generator uses as the first reference voltage whichever of the variable reference voltage and the first constant reference voltage is lower, and the output current controller uses as the second reference voltage whichever of the variable reference voltage and the second constant reference voltage is lower.

In contrast, Fogg discloses a first reference source 22, which is allowed to ramp-up at start-up by the action of the soft-start circuit 24. Fogg further discloses a voltage divider 26 for dividing the first reference voltage 22 to provide a second reference voltage lower than the desired output voltage. The voltage divider may be overdriven with an external reference to achieve external control of the output voltage. Therefore, unlike the present invention as recited in claim 3, neither the first reference voltage nor the second reference voltage of Fogg is constant.

Furthermore, the error amplifier 23 of Fogg always amplifies the difference between the second reference voltage and the output voltage. Thus, Fogg neither discloses nor suggests an error voltage generator that uses as the first reference voltage whichever of the variable reference voltage and the first constant reference voltage is lower, as recited in claim 3.

For at least these reasons, it is respectfully submitted that claim 3 is neither anticipated nor rendered obvious by Fogg. Accordingly, withdrawal of the rejection of claim 3 under 35 USC § 102(b) is respectfully requested.

Claims 4-7 depend from claim 3. Applicant respectfully submits that Kitagawa fails to cure the deficiencies of Fogg noted above with respect to claim 3. Accordingly, claims 4-7 are allowable for the same reasons as claim 3, as well as for the additional subject matter recited therein. Therefore, withdrawal of the rejection of claims 4-7 under 35 USC § 103(a) is respectfully requested.

Conclusion

For all of the above reasons, it is respectfully submitted that claims 1-7 are in condition for allowance and a Notice of Allowability is earnestly solicited.

Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is invited to contact the undersigned representative at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicant hereby petitions for an appropriate extension of time. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this communication to Deposit Account No. 01-2300 referencing client matter number 103213-00048.

Respectfully submitted,

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